

**UNITED STATES DISTRICT COURT  
WESTERN DISTRICT OF WISCONSIN**

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Wisconsin Resources Protection  
Council, Center for Biological  
Diversity, and Laura Gauger,

Plaintiffs,

Case No: 11-cv-45

v.

Flambeau Mining Company,  
Defendant.

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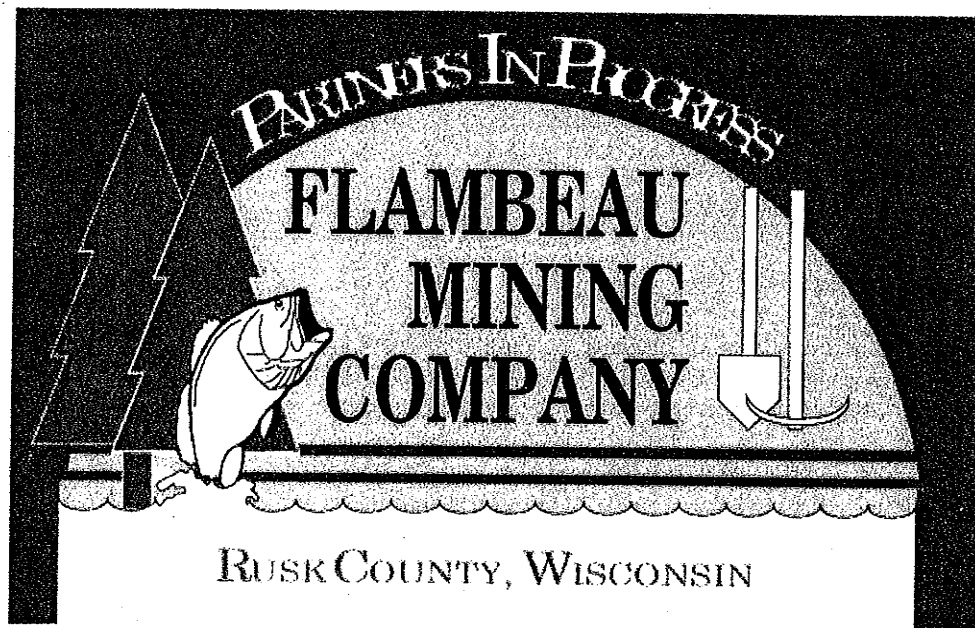
**SUPPLEMENTAL DECLARATION OF JAMES B. HUTCHISON IN  
OPPOSITION TO PLAINTIFFS' MOTION FOR PARTIAL SUMMARY  
JUDGMENT**

---

**EXHIBIT A**

**FLAMBEAU MINING COMPANY 2010 ANNUAL REPORT  
(PART 1 of 4)**

# 2010 Annual Report



January 2011

Flambeau Mining Company  
N4100 Hwy 27  
Ladysmith, WI 54848

Flambeau Mining Company  
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Ladysmith, WI 54848  
715-532-6690  
715-532-6885 (Fax)



February 28, 2011

Mr. Phil Fauble  
Division of Air and Waste  
Waste and Material Management  
101 South Webster Street, GEF II  
Madison, WI 53707

Dear Mr. Fauble:

The Flambeau Mining Company (Flambeau) is submitting the Addendum to the 2010 Annual Report as described in the January 31, 2011 annual report submittal.

The addendum consists of Appendix A, the backfill groundwater assessment, and the revised report text. Note: the entire text is being resubmitted, however, only two paragraphs of text in Sections 2.2 and 4.1.1 have been revised.

An additional 15 copies of the updated 2010 Annual Report containing the insertion of Appendix A and revised report text are also included with this communication.

If you have any comments or questions regarding this submittal, please contact me at (715)532-6690 Ext. 2 or [jana-murphy@clearwire.net](mailto:jana-murphy@clearwire.net).

Sincerely,

A handwritten signature in cursive script that reads "Jana E. Murphy".

Jana E. Murphy  
Environmental & Reclamation Manager

Flambeau Mining Company  
N4100 Hwy 27  
Ladysmith, WI 54848  
715-532-6690  
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January 31, 2011

Mr. Phil Fauble  
Division of Air and Waste  
Waste and Material Management  
101 South Webster Street, GEF II  
Madison, WI 53707

Dear Mr. Fauble:

The Flambeau Mining Company (Flambeau) is submitting one copy of the attached 2010 Annual Report pursuant to Part 1-8 of the Flambeau Mine Permit (Docket No. IH-89-14). This submittal also addresses other requirements of the Mining Permit and associated approvals.

The backfill groundwater assessment will be forthcoming in an addendum to the 2010 Annual Report. An additional 15 copies of the 2010 Annual Report including the addendum will be provided upon completion of the backfill groundwater assessment expected by the end of February 2011.

Monitoring and evaluations conducted during 2010 continue to document that the Flambeau River remains fully protected and Flambeau remains in full compliance with its permit standards.

If you have any comments or questions regarding this submittal, please contact me at (715)532-6690 Ext. 2 or [jana-murphy@clearwire.net](mailto:jana-murphy@clearwire.net).

Sincerely,

A handwritten signature in cursive script that reads "Jana E. Murphy".

Jana E. Murphy  
Environmental & Reclamation Manager

**Distribution**

<u>No. of Copies</u>	<u>Sent to</u>
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**FLAMBEAU MINING COMPANY  
2010 ANNUAL REPORT**

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Section 1

## **1 Purpose and Need**

This report serves to document the work that was done at the Flambeau Mine site in 2010 and to satisfy the requirements of the Mining Permit (MP).

### **Mining Permit, Part 1, Condition 8:**

*In accordance with sec. 144.89, Stats., Flambeau shall submit a report annually to the Department summarizing the activities which took place on the mining site during the year and shall include other additional information specified in this permit and associated plan approvals.*

### **Mining Permit, Part 2, Condition 4:**

*The annual report required under sec. 144.89, Stats., shall include discussion of all modifications received during the previous year and shall include an inventory of all modifications received subsequent to permit issuance. The annual report shall also discuss deviations from the approved Mining Plan as a result of final engineering refinements of subsequent plan approvals if these deviations do not require modifications, under Part 2, Conditions 2 and 3.*

### **Mining Permit, Part 2, Condition 6:**

*Flambeau shall keep a log of all incidents, such as spills, pond overflows and embankment failure or leakage, reported to its environmental compliance staff. This log shall, at all reasonable times, be available for inspection by any duly authorized Department employee. A summary of incidents subject to various Department reporting requirements shall be included in the annual report required under sec. 144.89, Stats.*

### **Mining Permit, Part 2, Condition 7 (Excerpt):**

*The annual report required under sec. 144.89, Stats, shall include a summary of all exploration drilling activities conducted on the mining site during the previous year.*

### **Mining Permit, Part 4, Condition 9:**

*Monitoring data and results shall be submitted to the Department within 30 days after completion of the required analyses. The annual report required in this permit shall summarize the year's monitoring activities and any observed trends in the monitoring data.*

### **Water Withdrawal Approval, Condition 1 (Excerpt):**

*Flambeau Mining Company shall maintain records which document the withdrawal. At a minimum, such information shall include the dates and duration of withdrawal, approximate pumping rate and approximate volume of water withdrawn. Monthly summaries shall be submitted to the department for those months in which a withdrawal*

*occurs. This information shall be available for department review in a separate file at the Flambeau Mining Company office and shall also be summarized in the annual report submitted as a condition of the mining permit.*

The primary location of the information which fulfills the requirements of the above conditions is referenced in Table 1-1.

**Table 1-1 Location Information Key**

Condition No.	Location of Information
MP, Part 1-8	Section 2 and 3
WWA, Condition 1	Section 2.6.2
MP, Part 2-4	Section 2.8
MP, Part 2-6	Section 2.10
MP, Part 2-7	Section 2.11
MP, Part 4-9	Section 4 and Appendix A, B and C



## 2 2010 Summary

### 2.1 Introduction

On January 14, 1991, after an exhaustive permitting process including extensive opportunity for public input, the Flambeau Mining Company (Flambeau), wholly owned by Kennecott Minerals Company, received from the Wisconsin Department of Natural Resources (Department) eleven permits to operate an open pit copper mine in Rusk County, Wisconsin. Over the life of the mine (1993 – 1997), 181,000 tons of copper, 3.3 million ounces of silver, and 334,000 ounces of gold were mined.

Backfilling of the open pit began in earnest in early 1997. Waste rock and soils were replaced to their approximate original location in the open pit. Over 30,000 tons of limestone was added to the sulfide-bearing waste rock to neutralize and buffer the groundwater as it resaturated the backfilled materials.

In 1998, the surface reclamation of the mine site began by returning the land surface to its approximate original contour. Stockpiled topsoil was spread across the site where grasslands and woodlands were created. Hydric (wetland) soils had been stockpiled as well and were used to create over ten acres of wetlands. Reclamation activities since 1998 have included seeding, plug planting, tree planting, erosion control, mowing, invasive species control, trail construction, and prescribed burning. During 2001, Flambeau completed the planting plan and submitted the Notice of Completion (NOC) to the Department. Concurrent with the submittal of the NOC, the reclaimed Flambeau Mine nature trails were opened to the public for non-motorized recreational activities. The City of Ladysmith had partnered with Flambeau to develop the four-mile nature trail system.

During 2006, monitoring of the reclaimed mine site documented the continued development of high quality native grassland, woodland and wetland communities. Ecological monitoring has documented that 272 native plant species are established on the site. Fifty-two bird species were found to be using the reclaimed mine site and 33 bird species were recorded as nesting on the site.

During 2007 Flambeau petitioned the Department for Certificate of Completion (COC). The COC process included a preconference hearing, public hearing and contested case hearing. At the contested case hearing, the parties negotiated an agreement and entered into a stipulation which was subsequently accepted by the administrative law judge and resulted in a signed order. The order granted a COC to Flambeau for 149 acres of the Flambeau Mine site that includes the backfilled pit and not including the 32-acre Industrial Outlot. Among the other aspects of the stipulation included in the Order was an agreement by Flambeau to withdraw the COC petition for the Industrial Outlot and that it would not apply for a COC for the Industrial Outlot for at least three years, a reduction of the reclamation bond to 20 percent of the \$11 million bond on file with the Department at that time (maximum reduction allowed by Wisconsin law), and a commitment by Flambeau to conduct further environmental monitoring.

During 2008 and 2009 Flambeau completed extensive monitoring as required by the 2007 COC stipulation and also supplemental monitoring on a voluntary basis. The monitoring completed

during 2008 and 2009 documents that the Flambeau River remains fully protected and Flambeau maintains compliance with its permits. Monitoring during 2010 was again extensive and provided further documentation of Flambeau River protection and permit compliance.

Throughout each phase of the project, samples have been collected from the Flambeau River and include water quality, sediments, fish, and macroinvertebrates. Continued protection of the Flambeau River, located 140 feet from the backfilled pit, has been documented throughout the Flambeau project by extensive monitoring.

## **2.2 Groundwater Quality Assessments**

Assessments of the backfill groundwater quality have been routinely performed with the most recent completed in February 2011. Further detail on groundwater quality can be found in Section 4 of this report.

## **2.3 Notice of Completion/Certificate of Completion**

Data obtained during monitoring of the reclaimed vegetation during 2000 documented that Flambeau met the vegetative performance standards for NOC.

During September 2001, Flambeau submitted the NOC to the Department. In a letter dated March 8, 2002, the Department accepted Flambeau's NOC. The four-year monitoring period prior to COC began November 19, 2001. For Flambeau to receive the COC, the performance standards were met during the final year of the 4-year monitoring period. The final year of the 4-year monitoring period was 2005. All performance standards were met in 2005 and again in 2006 even during extreme regional climatic conditions such as the regional drought experienced in 2005 and 2006. On January 9, 2007, Flambeau Mining Company petitioned the Department for COC.

The COC process included a preconference hearing in April, public hearing in mid-May and contested case hearing in late May 2007. The contested case portion of the process had just started when the parties began negotiating an agreement. At the hearing, the parties entered into a stipulation which was subsequently accepted by the administrative law judge and incorporated into an order. The order was signed by the judge granting a COC to Flambeau for 149 acres of the Flambeau Mine site that includes the backfilled pit and not including the 32-acre Industrial Outlot.

Among the other aspects of the Stipulation included in the Order was an agreement by Flambeau to withdraw the COC petition for the Industrial Outlot and that it would not apply for a COC for the Industrial Outlot for at least three years, a reduction of the reclamation bond to 20 percent of the \$11 million bond on file with the Department at that time (maximum reduction allowed by Wisconsin law), and a commitment by Flambeau to conduct further environmental monitoring.

## **2.4 Industrial Outlot**

### **2.4.1 Reuse of Industrial Outlot Facilities**

On January 8, 1998 Flambeau submitted a request for modification of the Mining Permit and

Reclamation Plan. The requested modifications included modification of the final land use for 32 acres of the mining site to allow for alternative use of the on-site buildings and related ancillary facilities, railroad spur and a portion of the former Type II waste rock stockpile area by the Ladysmith Community Industrial Development Corporation (LCIDC).

On July 30, 1998 the Department approved the request for modification of the final land use for the 32 acre Industrial Outlot with the following condition: "If the portion of the site covered by the lease agreement with the LCIDC has not been put to an acceptable alternative use by the end of 2004, the site shall be reclaimed in a manner consistent with reclamation of the remainder of the mining site. Any demolition waste resulting from such reclamation shall be disposed of in a properly licensed solid waste facility."

A long-term lease agreement exists between Flambeau and the LCIDC, where the LCIDC leases a 32-acre portion of the former mine site referred as the Industrial Outlot. The 32-acre area includes the former administration building now occupied by the Ladysmith Department of Natural Resources Service Center; the former Water Treatment Plant (WTP) building now occupied by Xcel Energy and the Department; the railspur for which the LCIDC has installed major improvements and purchased adjacent property outside of the mine project area; an approximate eight-acre area north of the railspur in the former Type II stockpile area; and a 0.9-acre biofilter constructed in 1998 to reduce suspended solids and other contaminants resulting from precipitation runoff from the Industrial Outlot.

During 2000, the LCIDC completed renovations on the administration building, now serving as the Department's Ladysmith Service Center, and the WTP building, now housing Xcel Energy's line maintenance shop and the Department's equipment storage area. In addition, the LCIDC constructed another building for the Department between the Service Center and the former WTP to house additional Department equipment. The Department and Xcel Energy continue to occupy the former mine buildings.

During 2003, the LCIDC submitted a request to the Department for the retention of the rail spur located east of Highway 27 as part of the communities' on-going efforts to increase industrial development. The LCIDC had committed to remove and reclaim about 200 feet of the rail spur east of Highway 27. In a letter dated June 12, 2003, the Department stated that it "...is satisfied that the portion of the rail spur east of the highway is being used for alternate purposes. Therefore, the rail spur east of Highway 27 will not need to be removed and revegetated..."

During early 2004, the Flambeau Riders, Inc. (Flambeau Riders) approached Flambeau about the possibility of developing non-motorized trails on property owned by Flambeau south of the Industrial Outlot and east and south of the Flambeau River. In addition, the Flambeau Riders inquired about using a portion of the Industrial Outlot as driveway access and as an equestrian trailhead. In documents dated May 19 and 28, 2004, Flambeau proposed to the Department an alternate use plan for Flambeau's former rail spur area west of Highway 27 and the eight-acre area north of the west rail spur area within the Industrial Outlot as a driveway and equestrian trailhead.

During 2004, a Community Advisory Group was formed to advise Kennecott Minerals on development of a land use management plan for the 2,177 acres owned by Flambeau as of year end 2004. The Advisory Group is represented by Rusk County, City of Ladysmith, Town of Grant, Ladysmith Area Trails Association, Flambeau Riders, LCIDC and the Department's Northern Rivers Initiative. During a late December 2004 meeting, the Advisory Group agreed that the expansion of trails south of the reclaimed mine site and using a portion of the Industrial Outlot as an equestrian trailhead were acceptable and beneficial uses of the property. It was agreed to formalize the agreement with 1) a Trail Easement & License between Flambeau and the City of Ladysmith and 2) a Sublease between the LCIDC and the City of Ladysmith. Fully executed documents, Trail Easement & License and Sublease, dated January 1, 2005 are in place.

In a letter to the Department dated December 30, 2004, Flambeau provided notice that the 32 acre Industrial Outlot has met the condition of "acceptable alternative use."

The Department responded in a letter dated February 18, 2005 that the only portion of the Industrial Outlot for which an acceptable alternate use had not been designated was the section lying north of the railspur in the area of the former Type II waste rock stockpile. The Department conceptually found the proposed use as an equestrian trail head acceptable, but required further details to review and approve the proposed construction plans.

In submittals dated March 1 and July 21, 2005, Flambeau provided to the Department drawings and detail regarding the proposed equestrian trailhead and access via Copper Park Lane. The Department provided approval for the project in a letter dated July 28, 2005.

The construction of the equestrian trailhead initiated on August 11, 2005 and was complete by September 8, 2005. Trail and trailhead improvements have continued by the Flambeau Riders on an annual basis through 2010.

#### **2.4.2 Rail Spur Reclamation**

During spring 2003, Flambeau and the LCIDC agreed that the Wisconsin Department of Transportation should remove the rail crossing as part of the renovation of Highway 27 during 2004. In addition, storm water sampling had measured copper concentrations entering the 0.9-acre biofilter that may have been associated with the west rail spur area.

During fall 2003 the top two feet of ballast and gravel were excavated from the rail spur area west of Highway 27. Reclamation of the west rail spur area and 200 feet east of Highway 27 was completed during spring 2004.

A submittal, Rail Spur Reclamation Documentation, dated November 10, 2004 was made to the Department and included a topographic drawing showing the east and west reclaimed rail spur areas and details regarding the reclamation of the rail spur areas.

### 2.4.3 Intermittent Stream C

The Flambeau Mine remains committed to the protection of water quality in the Flambeau River. Since final reclamation in 1999, Flambeau has continued its monitoring of water quality in the Flambeau River as well as surface runoff into the Flambeau River. This monitoring indicates that the water quality of the Flambeau River remains fully protected.

Copper and zinc concentrations have been measured in offsite background storm water runoff and in runoff from the Industrial Outlot located on the reclaimed mine site. The non-point sources of runoff from the Industrial Outlot are being passively treated by the 0.9-acre biofilter that substantially reduces the concentrations of metals before flowing into Intermittent Stream C that eventually discharges to the Flambeau River. The biofilter itself supports populations of aquatic biota, including fish and frogs.

An expanded surface runoff monitoring program including bioassessment of the intermittent stream was conducted during 2004 and 2005. The work plan evaluated 1) the biological conditions within Stream C, 2) areas of the Stream C watershed that contribute to the water in Stream C, 3) aspects of the Industrial Outlot bio-filter that may influence copper levels that are discharged from the bio-filter to Stream C; and 4) the hydrology and water quality within Stream C.

In a submittal dated January 20, 2005, Flambeau provided a memorandum prepared by Foth & Van Dyke that summarized and assessed the data that was collected in 2004.

In summary, Stream C is an intermittent stream with poor aquatic habitat that lacks aquatic vegetation and aquatic macroinvertebrates. As a result of the poor habitat and very limited food source, no fish were observed in the stream during the 2004 biological assessment. Stream C does not possess the types of characteristics that are needed for it to support any type of fishery. The sediment sampling of the biofilter indicates that it is functioning as designed. This is supported by the fish and amphibians that have been observed in the biofilter. The surface water sampling that has been completed within the watershed of Stream C suggests that some areas, particularly those affected by highway runoff, may naturally exhibit elevated copper levels in the water. In addition, the 2004 sampling indicated that there appeared to be localized areas at the Industrial Outlot that were contributing elevated copper levels to storm water that flowed to the biofilter. Based on this last point, Foth and Van Dyke advised that Flambeau consider implementing measures to minimize storm water contacting the localized areas that appeared to be contributing to the elevated copper levels.

In a document dated October 24, 2005, Flambeau submitted to the Department the results of the 2005 surface runoff monitoring program. The 2005 results were consistent with the 2004 results.

Monitoring of the surface water at the site since the completion of reclamation has indicated that the Industrial Outlot biofilter is working well in lowering copper levels of surface water runoff flowing from the Outlot area. During 2003 and 2004 the former rail spur was reclaimed in an effort to reduce the concentration of copper in surface water runoff.

During 2006, Flambeau further reduced sources of copper from the Outlot area to the Biofilter. Foth & Van Dyke oversaw the design and implementation of the work plan. The work plan was implemented starting May 18, 2006 and complete by June 21, 2006. The work consisted of excavation of approximately 900 linear feet of the existing drainage ditch collecting storm water runoff from the area around the Copper Park buildings and replacement of the cobbled drainage way with limestone cobbles. Approximately 2.2 acres of gravel parking lot was excavated to a minimum depth of four inches. Soil sampling was conducted following completion of excavation. The average copper concentration of the exposed subgrade after removal was approximately 38 mg/kg (ppm). A non-woven geotextile fabric was placed on the exposed subgrade of all excavated areas within the area of asphalt and the drainage ditch prior to backfilling. Crushed limestone gravel was placed on the non-woven geotextile fabric as subgrade material and the parking lot was paved with three inches of bituminous concrete (asphalt). All excavated material (2,300 cubic yards) was appropriately disposed at the licensed Timberline Trail Landfill.

Storm water samples collected during 2006, 2007, 2008, 2009, and 2010 indicate a marked reduction in copper concentrations in storm water reaching the biofilter.

A report prepared by Foth & Van Dyke titled Construction Documentation Report – Flambeau Industrial Outlot was submitted to the Department on September 12, 2006. Included with the report were results of soil sampling following excavation. The report provides further detail on the completion of the work plan.

On January 12, 2007, the Biofilter Management Plan was submitted to the Department. The report presents surface water data collected during 2006 and post 2006 construction which documents a dramatic reduction in copper loading to the biofilter. The report also presents a biofilter management plan including monitoring of the biofilter.

In a document dated October 14, 2008 Foth Infrastructure & Environment, LLC, on behalf of Flambeau Mining Company, provided a summary of stipulation and supplemental monitoring results. The voluntary supplemental monitoring Flambeau conducted included stormwater and soils within the Industrial Outlot in the vicinity of the Copper Park Lane. Based upon elevated copper concentrations within the stormwater and soils, Foth proposed a work plan in the vicinity of Copper Park Lane that included removal of surficial soils and replacement with clean fill and topsoil. The work plan was proposed to eliminate any possibility that this area could be considered a potential source of copper to Stream C.

Following review and concurrence by the Department, the work along the Copper Park Lane was completed November 5 – 7, 2008. A total of 303.85 tons of surficial soils were excavated and disposed as special non-hazardous waste at the Timberline Trail landfill. Analyses of the sub-base soils indicate that materials of concern were removed. Gravel covered with topsoil was used as clean fill materials in the area of excavation. Seeding and placement of a net free erosion control blanket completed the work. A January 23, 2009 documentation report provided to the Department contains further detail on the Copper Park Lane work.

Additional samples were collected October 27, 2008 and results submitted December 9, 2008.

These include samples that were collected just prior to the completion of the work described in the work plan.

Pursuant to NR 103.08(1) and previous discussions with the Department, Flambeau requested in a document dated August 30, 2010 a meeting with Department officials to discuss a conceptual plan for stormwater activities at the site. Flambeau is exploring the possibility of promoting infiltration of stormwater at the site. In early November 2010 the Department and Flambeau met on site.

During spring 2010, as part of the exploration to promote stormwater infiltration, Flambeau had Natural Resource Consulting complete a preliminary wetland determination regarding certain areas on the site. Results of the preliminary wetland determination were discussed with the Department during the November 2010 site meeting.

During 2010 monitoring of storm water and surface water continued. Consistent with previous years' results, the 2010 monitoring results document that the Flambeau River remains protected.

## **2.5 Community Involvement**

Flambeau's involvement with the surrounding communities has included promotion of community activities, partnering with the communities, economic development, promoting tourism, enhancing communication, restoration projects, and maintaining an open door policy.

The major achievements for 2010 are set forth below:

- The Flambeau Community Advisory Group formed during 2004 continued to advise Flambeau Mining on the development of a land use management plan related to the over 2000 acres owned by Flambeau.
- Flambeau's partnership with the City of Ladysmith and Flambeau Riders, Inc. continued with improvement of the non-motorized multi-use recreational trails south of the reclaimed mine site. These trails, the Copper Park Equestrian Trails and Trailhead, were opened to the public in September 2005. The Flambeau Riders work during 2010 included installing one bridge crossing, increasing diameter of gravel pads around hitching tie lines, widening/stabilizing trails, and additional work.
- The Reclaimed Flambeau Mine nature recreation trails were open to the public for the ninth year. On Earth Day 2010 volunteers constructed Aldo Leopold benches that were placed along the reclaimed mine nature trails.
- During 2010 geocaching continues to be enjoyed on the reclaimed mine site. Geocache sites can be searched out along the Reclaimed Flambeau Mine Nature Trails, Copper Park Equestrian Trails and Sisters Farm Trails. Details on geocache sites can be found at [www.geocaching.com](http://www.geocaching.com).
- The Ladysmith Community Safety & Wellness Coalition's Healthy Lifestyles for Rusk County held their fifth annual community walk on the Reclaimed Flambeau Mine Nature

Trails in August 2010.

- During late September 2010, as part of the Leaf it to Rusk Fall Festival, Flambeau and the Flambeau Riders partnered to host trail rides and horse drawn wagon rides on the Copper Park Equestrian Trails and within the Industrial Outlot area where the equestrian trailhead is located. Over 100 community members turned out for the event.
- Flambeau partnered with the Rusk Area Arts Alliance to produce the 2011 Reclaimed Flambeau Mine calendar featuring local artists. The artists provided artwork of varying media depicting their interpretation of the natural beauty of the reclaimed mine site. Flambeau Mining received the 2010 Friend of the Arts Award presented by Rusk Area Arts Alliance.
- Flambeau continued its open door policy and upon request conducted tours of the mine site.

## **2.6 Water Management**

### **2.6.1 Precipitation Runoff**

Since 2000, the reclaimed mine site surface remains stabilized by vegetative growth and there is minimal evidence of erosion. Aerial photographs (color and infrared) taken during August 2006 document surface stabilization of the reclaimed mine site.

Flambeau River water quality samples were collected upstream and downstream from the reclaimed mine site during 2010. Comparing analytical results, there was no notable difference between downstream and upstream samples and this further confirms that the reclaimed site is stable and functioning as designed. A summary of Flambeau River water quality results is found in Appendix B and Appendix C.

### **2.6.2 River Water Withdrawal**

On May 5, 1998 the Department approved Flambeau's application to withdraw water from the Flambeau River for use on site. The Department's approval requires submittal of monthly summaries for months during which a withdrawal occurs. When the irrigation pump system operates it is powered with a portable generator since electrical supply had been removed during 2001. During 2010 no water was withdrawn from the Flambeau River.

Wetland 1 is located immediately west of the reclaimed mine site. With the backfilling of the open pit being complete in 1997, the groundwater table has recovered significantly and Wetland 1 has been documented to be notably moister with groundwater seeps again flowing.

During 2010 Flambeau continued to monitor the staff gauge within Wetland 1 and maintain the ability to add mitigation water to the wetland. Mitigation water was not added during 2010 as was also the case between 2002 and 2009.

## 2.7 2010 Milestones

The following is a summary of significant milestones throughout the year:

**Table 2-1 2010 Milestones**

<b>Milestone</b>	<b>Month</b>
Flambeau Partnered with the Community to Host Several Events on the Reclaimed Mine Site	Summer/Fall

## 2.8 Modifications & Deviations

Condition 2-4 in the Mine Permit requires an inventory of deviations and modifications to the Permit received subsequent to permit issuance. Activities during 2010 were consistent with permits, approved plans, and modifications received subsequent to permit issuance. During 2010 there were no modifications or deviations to the Permit.

## 2.9 Construction Reports

There were no activities requiring the preparation of construction reports during 2010.

## 2.10 Incident Log

Mine Permit Condition 2-6 requires a log of all incidents such as spills, pond overflow, embankment failure or leakage. This log is maintained on-site and is available for inspection. Spills are reported in accordance with Wis. Adm. Code ch. NR 706, CERCLA Reportable Quantities and SARA Section 302 Extremely Hazardous Substances Reportable Quantities.

During 2010 there were no reportable or recordable incidents that occurred on the reclaimed Flambeau Mine site.

## 2.11 Drill Holes

Mine Permit Condition 2-7 requires a summary of all exploration drilling activities conducted on the mine site during the previous year. No exploration drilling activities were conducted on the reclaimed mine site during 2010.



### **3 Reclamation Activities**

As required by the Mine Permit Section 3, reports on progress of reclamation activities are prepared throughout the year. An annual report is required by Condition 3-26(d). The 2010 Annual Reclamation Report dated November 15, 2010 was submitted to the Department and is incorporated by reference. Other reclamation updates submitted on January 31 and November 15, 2010 are incorporated by reference.

Upon receipt of the COC on May 31, 2007 for the 149 acre Reclaimed Flambeau Mine Nature Area, Flambeau has met the requirements for reclamation within the nature area. Reporting of reclamation activities within the Copper Park Business & Recreation Area will continue until Flambeau receives the COC for this area as well.

During 2010 the Copper Park Business & Recreation Area (also known as the 32-acre Industrial Outlot) did not require any activities related to reclamation. The buildings are occupied by the Department's Ladysmith Service Center and Xcel Energy. The Copper Park Equestrian Trailhead continues to be used by horseback riders to park horse trailers and ride out to the Copper Park Equestrian Trails. The 32-acre area is resistant to erosion and the vegetation remains successfully established.

#### **3.1 Other Activities**

Improvements were made to the Copper Park Business & Recreation Area that were not related to reclamation and include:

- The Flambeau Riders planted tree seedlings within the trailhead area. They also increased the diameter of gravel pads surrounding the horse tie lines next to the horse trailer parking spurs.
- The Flambeau Riders widened and rerouted sections of the Copper Park Equestrian Trails. One small bridge was installed crossing a drainage.

Also reported are post-COC management activities during 2010 within the Reclaimed Flambeau Mine Nature area that included removal of invasive species and mowing grass trails.



#### **4 Site Monitoring**

Environmental monitoring at the reclaimed Flambeau Mine during 2010 included assessing the quality of groundwater and backfill pore water. Together with data obtained as part of the project monitoring plan, the Annual Report is also presenting the data obtained during 2010 monitoring completed in accordance with the May 31, 2007 Stipulation which includes fish and crayfish collection. All data obtained during environmental monitoring continues to show that Flambeau remains in compliance with all permit standards and the Flambeau River remains fully protected.

##### **4.1 Groundwater Quality Sampling and Analysis**

Quarterly groundwater monitoring was performed in accordance with descriptions provided in the Updated Monitoring Plan (July 1991), the Revised Mining Permit Quality Assurance/Quality Control Document (August 1991) and the Local Agreement. As a result of regulatory changes with respect to arsenic in groundwater, the Department requested that Flambeau consider analyzing groundwater samples for arsenic on a quarterly basis. In a letter dated August 5, 2004, Flambeau notified the Department that arsenic will be included in the quarterly monitoring program. Results of the 2010 monitoring were submitted to the Department Mine Reclamation Unit April 20, August 26, December 3, 2010, and January 27, 2011. Those reports are incorporated by reference.

Groundwater quality data from 2010 was generally consistent with recent past years' data including iron and manganese in MW1004P, which were observed to be elevated during the fourth quarter sampling 2009 but were consistent with previous years data upon resampling in December 2009. Groundwater elevations in monitoring wells across the site showed a general increase from previous years.

##### **4.1.1 Backfilled Pit Water Quality Assessment**

The porewater chemistry of the backfill placed in the mined out Flambeau pit has been monitored since February 1999. SRK Consulting, Inc. reviewed the results annually through 2009 to assess geochemical interactions between the groundwater and the backfill. InTerraLogic, Inc conducted the 2010 review and assessment. Appendix A contains the technical memorandum that provides the outcomes from InTerraLogic's review of monitoring results for 2010. The review format established during the previous reviews was retained.

There were no significant changes in porewater chemistry in the backfilled pit during 2010 compared to previous years. The 2010 data show continuation of established trends for most analytes (alkalinity, major cations, major anions, iron, and manganese) and fluctuations in concentrations that are within the ranges observed in previous years of monitoring. In particular, the limestone amendments to the waste rock continue to provide acid neutralization capacity and there is no indication of acid generation occurring at the current time. Other specific observations about the monitoring trends are:

- Alkalinity concentrations are stable or fluctuating within historical ranges at all wells

- CO<sub>2</sub>(g) partial pressures are stable at most wells, although MW-1013 and MW-1013B and the background well MW-1005P showed small increases in 2010 compared to previous years
- Redox conditions are relatively stable at most wells but continue to fluctuate at MW-1013B
- Manganese concentrations continue to be stable or decreasing slowly with the exception of MW-1013B, which continues to show large fluctuations on a year-to-year basis although variability is within the historical range
- Iron concentrations are stable and at near background levels for most wells with the exceptions of MW-1013, MW-1013C, and MW-1014C, although concentrations at MW-1014C continued to show a slow decline during 2010
- Geochemical modeling indicates that conditions of saturation with calcite and gypsum are prevalent at wells that sample porewater from limestone-amended backfill; conditions of supersaturation with rhodochrosite and siderite also occur
- Consistency of decreasing trends for manganese, iron, and sulfate suggest that a process of dilution and displacement by background groundwater is occurring at least at the upgradient location of the MW-1014 well cluster

#### 4.1.2 Trend Analysis

Groundwater and surface water sample results collected for the 2010 monitoring program were added to the analytical monitoring historical database. These results were statistically tested and graphically displayed to determine whether any significant increasing or decreasing trends are occurring in the groundwater or surface water chemistry. Groundwater quality results, hydrographs, surface water quality results, trend graphs, and statistical test results are included as Attachments 1-4 to Appendix B.

Intervention boundary wells included in the trend analyses are MW-1000PR, MW-1002, MW-1002G, MW-1004P, MW-1004S, MW-1005, MW-1005P, MW-1005S, and MW-1010P. The in-pit wells included in the trend analyses are MW-1013, MW-1013A, MW-1013B, MW-1013C, MW-1014, MW-1014A, MW-1014B and MW-1014C. Wells MW-1015A and MW-1015B (also included in the analyses) were constructed in January 2001 approximately 1000 feet northwest of the backfilled pit and adjacent to the compliance boundary.

Note that for the first time during the post-mining period, wells MW-1000R and MW-1004 in the fourth quarter of 2010 had sufficient water recovery for sampling. These wells are not included in the trend analysis results for this report since only one post-mining sample is available for each, but will be included in subsequent analyses assuming recovery continues.

A detailed analysis of statistical trends occurring in the groundwater and surface water data was performed. Statistical tests evaluated long-term trends occurring during the post-mining period (October 1997 to the present) and short-term trends for the most recent five years. Historical trend graphs of the data are also presented. Many long-term trends noted as statistically significant appear to be generally stabilizing due to the completion of well recoveries during the post-mining

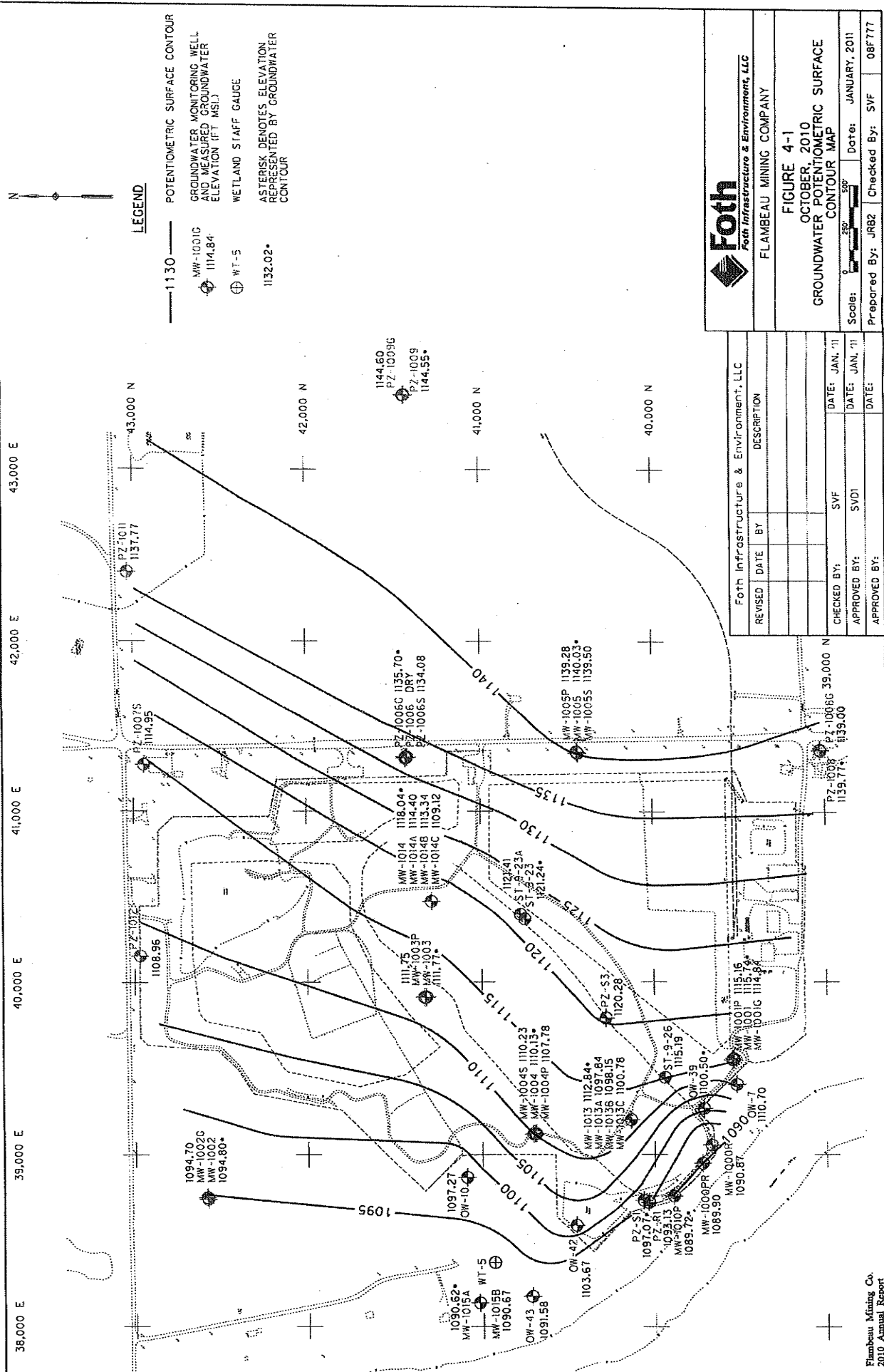
period, or are noted as statistical trends due only to relatively small consecutive concentration increases or decreases.

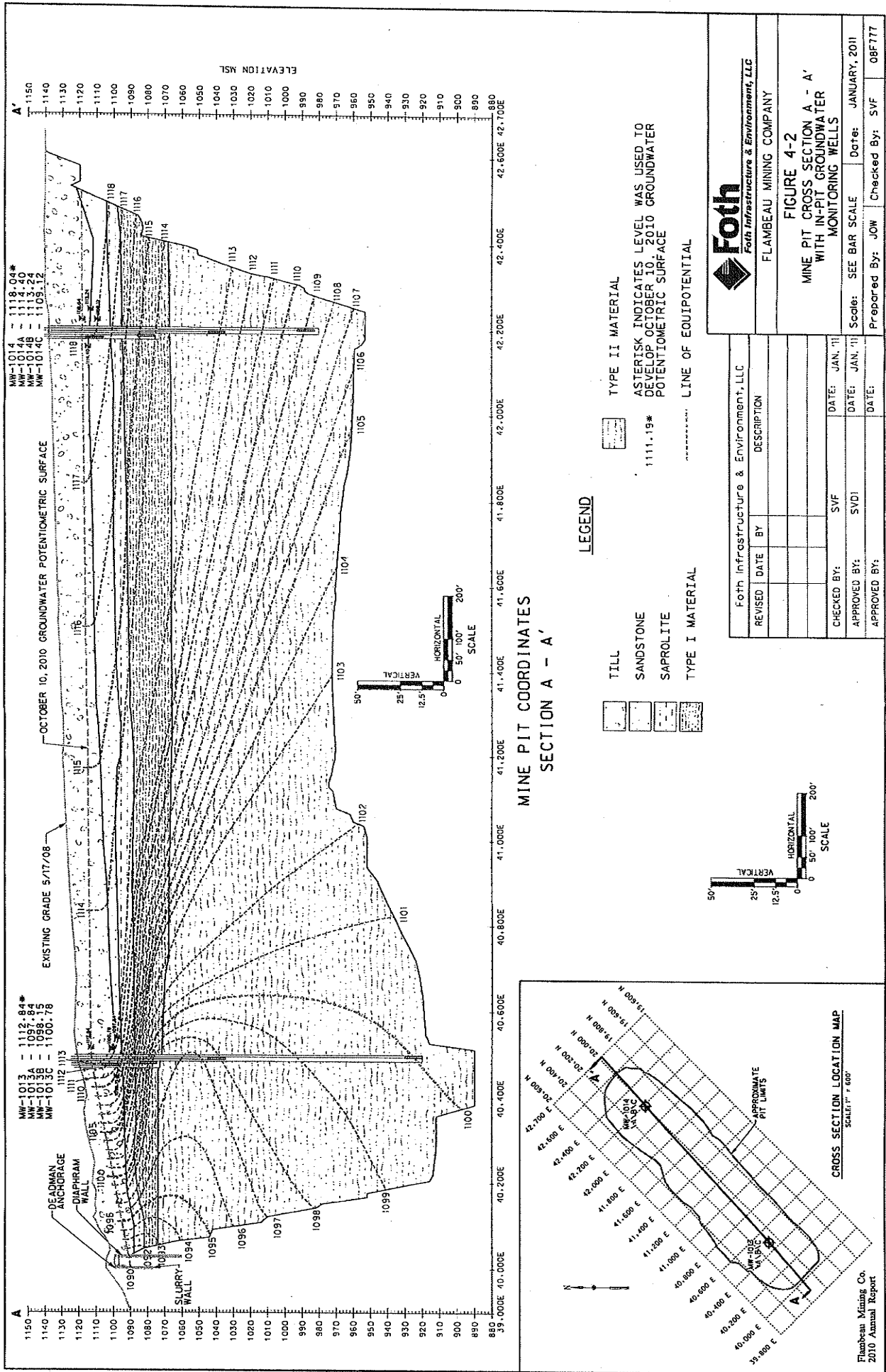
The majority of the statistically significant trends with notable concentration changes occur with the quarterly groundwater monitoring parameters. Of these, significant statistical trends include the intervention boundary well MW-1000PR where hardness, sulfate and conductivity continue stronger decreasing trends following sharp increases subsequent to the post-mining period. In MW1015B, stronger decreasing trends for iron and manganese continue following sharper increases from 2002 to 2003, with redox in MW-1015B showing a stronger increasing trend. The in-pit wells MW-1013B (copper) and MW-1013C (iron) continue to have stronger increasing trends, while the in-pit wells MW-1014A (manganese) and MW-1014C (hardness, iron, manganese and sulfate) continue to observe stronger decreasing trends.

Few significant trends were noted for the annual groundwater parameters of barium, cadmium, calcium, chloride, chromium, lead, magnesium, mercury, potassium, selenium, silver, sodium, and zinc. The somewhat more moderate decreasing trends included MW-1000PR (calcium, magnesium and zinc), MW-1013A (barium), MW-1014B (zinc) and MW-1014C (zinc). A somewhat moderate increase of sodium occurred in MW-1005P during the 2010 sampling event.

No statistically significant trends were observed in the surface water monitoring results. A single elevated concentration of iron and manganese occurred during the September 2010 sampling event for both the upstream and downstream monitoring locations.

Figure 4-1 (Groundwater Potentiometric Surface Contour Map) shows the groundwater potentiometric surface using data obtained during October 2010. Figure 4-2 (Mine Pit Cross section A-A') shows a profile of hydraulic head along the cross section through the pit backfill. The Potentiometric Surface Contour Map shows that the horizontal direction of groundwater flow is consistent with historical data, i.e., westward towards the Flambeau River. The hydraulic cross section displayed in Figure 4-2 continues to show a predominant pattern of downward groundwater movement at the pit backfill wells with convergent flow toward the Flambeau River.





## **4.2 Wetland Monitoring and Biofilter Management**

During 2010 Flambeau monitored wetland surface flows and Industrial Outlot 0.9-acre biofilter stormwater.

In accordance with Section 3.1.4.3 of the Updated Monitoring Plan, Flambeau continues to monitor water level measurements at least three times per year (spring, summer, and autumn) in Wetland 1. Wetland surface flows will be monitored in Wetland 1 until the Department approves a future request from Flambeau to discontinue monitoring.

Stormwater monitoring associated with the 0.9-acre biofilter was completed in accordance with the Biofilter Management Plan submitted to the Department on January 12, 2007. As stated in the Biofilter Management Plan, stormwater monitoring will continue for at least three years.

### **4.2.1 Wetland Surface Flows**

In May 2001, Flambeau submitted a Wetland Area Hydrographic Assessment prepared by Foth & Van Dyke evaluating the wetland water elevations and recommending cessation of monitoring of wetland surface water elevations, with the exception of Wetland 1, in accordance with the Updated Monitoring Plan. Based upon the Wetland Area Hydrographic Assessment, Flambeau requested the Department's approval of cessation of monitoring wetland surface water elevations for Wetlands 5C, 6C, 7 and 10A. During April 2002, the Department concurred with Flambeau's request to decrease the extent of wetland water level monitoring.

In accordance with Section 3.1.4.3 of the Updated Monitoring Plan, Flambeau monitors water level measurements at least three times per year (spring, summer, and autumn). Water levels in Wetland 1 (Staff Gauge WT-5) were measured three times during 2010, spring, summer and autumn. Standing water at the staff gauge was observed during summer and autumn. Mitigation water was not added during 2010 as was also the case between 2002 and 2009.

Measurements from Wetland 1 were provided to the Department on January 31, 2011, the report is incorporated by reference. Figure 4-1 shows the staff gauge location.

### **4.2.2 Biofilter Management**

The Biofilter Management Plan requires monitoring stormwater during two events annually for at least three years. Parameters monitored are copper, zinc, conductivity, hardness and pH. During 2010 stormwater samples were collected during April, September, and October. Results were submitted to the Department on September 23, 2010 and December 7, 2010, respectively. The 2010 average biofilter inflow copper concentration was 42.5 µg/l and the average outflow copper concentration was 7.9 µg/l. During 2010 the 0.9-acre biofilter continued to effectively reduce the concentrations of copper leaving the biofilter.

#### 4.3 Surface Subsidence

Pursuant to Section 3.1.7 of the Updated Monitoring Plan (July 1991), with 2008 being the tenth year after reclamation activities were performed in the area of the pit, a review of the surface topography in the area of the pit was performed in 2008.

The results of the 2008 subsidence analysis indicated a general increase of 0.6 feet these results were consistent with the results of the review of the surface topography in the area of the pit completed in 2001 when the general subsidence across the site was less than a half a foot which is within the accuracy of the mapping technique and the largest settlement observed in isolated areas by mapping was 1.5 feet.

Subsequent subsidence surveys are to occur in the twentieth (2018) and fortieth (2038) year after reclamation activities in the area of the pit are completed.

#### Aerial Photography (Color and Infrared)

In accordance with Section 3.1.6 of the Updated Monitoring Plan (July 1991), aerial and color infrared photography was completed in the late summer for four consecutive years following completion of closure and will continue every five years throughout the long-term care and maintenance period to monitor success of revegetation. Year 2005 was the fourth year of the four consecutive years for aerial and color infrared photography since the submittal of the NOC in 2001. Aerial and color infrared photography was completed on August 3, 2006 for a fifth additional year and results were presented in the 2006 Annual Reclamation Report.

In the November 7, 2002 submittal of the 2002 Aerial and Color Infrared Photography, Flambeau requested a reduction of the area of coverage for the photography based upon the substantial rebound of groundwater around the reclaimed mine site. Flambeau proposed that the photography cover the reclaimed mine site and 500 feet beyond the site's perimeter including the area of Wetland 1. In a letter dated July 9, 2003, the Department authorized Flambeau to reduce the breadth of the aerial and color infrared photography as requested.

With the long-term care phase of the Flambeau project beginning with the May 2007 COC, aerial and color infrared photography will be conducted every five years – occurring during 2012, 2017, 2022, 2027, 2032, 2037, 2042, and 2047.

#### 4.4 Other Activities

Other site monitoring was performed during 2010 including monitoring set forth as part of the Stipulation agreement of May 31, 2007.

The Stipulation Monitoring Work Plan and associated Quality Assurance Project Plan were submitted on December 7, 2007. Stipulation monitoring during 2010 included surface water quality and biota sampling in the Flambeau River. The data from these monitoring events was submitted to the agreement parties on January 21, 2011. This submittal is included in Appendix C of this report.

## REFERENCES

2000 Annual Report	January 2001
2005 Annual Report	January 2006
2006 Annual Report	January 2007
2007 Annual Report	January 2008
2008 Annual Report	January 2009
2009 Annual Report	February 2010
2001 Annual Reclamation Report	November 2001
2004 Annual Reclamation Report	November 2004
2005 Annual Reclamation Report	November 2005
2006 Annual Reclamation Report	November 2006
2007 Annual Reclamation Report	November 2007
2008 Annual Reclamation Report	November 2008
2009 Annual Reclamation Report	November 2009
2010 Annual Reclamation Report	November 2010
2008 Monitoring Results and Copper Park Lane Work Plan	October 2008
Biofilter Management Plan	January 2007
Construction Documentation Report – Flambeau Industrial Outlot	September 2006
COC Stipulation Monitoring Work Plan	December 2007
Local Agreement	August 1988
Mine Permit Application	December 1989
Mining Permit	January 1991
Revised Mining Permit Quality Assurance/Quality Control Plan	August 1991
Stipulation and Order	May 2007
Stipulation Monitoring Work Plan QAPP for the Flambeau Mine	December 2007
Updated Monitoring Plan	July 1991